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09/706,071	11/03/2000	Leif Wilhelmsson	34650-00605USPT	6691

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Jenkins & Gilchrist PC  
1445 Ross Avenue  
Suite 3200  
Dallas, TX 75202

EXAMINER

SCHEIBEL, ROBERT C

ART UNIT PAPER NUMBER

2666

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

72

<b>Office Action Summary</b>	<b>Application No.</b> 09/706,071	<b>Applicant(s)</b> WILHELMSSON ET AL.	
	<b>Examiner</b> Robert C. Scheibel	<b>Art Unit</b> 2666	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see Amendments to the Drawings starting at page 2 and paragraph 4 on page 9, filed 7/12/2004, with respect to objections to the drawings have been fully considered and are persuasive. The objections to the drawings have been withdrawn.
2. Applicant's arguments, see Amendments to the Drawings starting at page 2 and paragraph 4 on page 9, filed 7/12/2004, with respect to objections to the specification have been fully considered and are persuasive. The objections to the specification have been withdrawn.
3. Applicant indicates in the second paragraph of page 9 that the new limitation that the size and the coding of the packet type are dependent upon one another is supported in pages 20-23 of the specification. However, the examiner does not agree that this limitation is supported in this section of the specification and did not find support for the limitation in the remainder of the specification. As such, the claims have been rejected under 35 U.S.C. 112, first paragraph, as adding new matter. The details of the rejection are included below. If the applicant feels that this limitation is in fact supported in the specification, the examiner requests a more detailed explanation of this support.
4. Applicant's arguments, see the section titled "Arguments in Support of the Claims", filed 7/12/2004, with respect to the rejection of claims 1-2, 11-13, 21-22, and 31-33 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of Bluetooth Core Specification 1.0 B ("Bluetooth 1.0 B") in view of U.S. Patent 6,567,375 to

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Balachandran et al. This new ground of rejection is necessitated by the amendment of the claims and the details of the rejection are contained below.

5. Applicant's arguments, see the section titled "Arguments in Support of the Claims", filed 7/12/2004, with respect to the rejection of claims 1-3, 8-9, 10-11, 14, 16-17, 21-23, 28-29, 30-31, 34, and 36-37 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of the paper "Improving Wireless LAN Performance via Adaptive Local Error Control" by Eckhardt et al. This new ground of rejection simply uses a different teaching of Eckhardt and is necessitated by the amendment of the claims. The details of the rejection are contained below.

6. Applicant's arguments, see the section titled "Arguments in Support of the Claims", filed 7/12/2004, with respect to the rejections of claims 4-5, 6-7, 15, 18-20, 24-25, 26-27, 35 and 38-40 under 103(a), have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of the paper "Improving Wireless LAN Performance via Adaptive Local Error Control" by Eckhardt et al (claims 4-5, 15, 24-25, and 35), and in further view of U.S. Patent 5,920,597 to Khayrallah et al (claims 6-7 and 26-27) and in further view of U.S. Patent 5,701,294 to Ward et al (claims 18-20 and 38-40). These new grounds of rejection are necessitated by the amendment of the claims and the details of the rejections are contained below.

*Specification*

7. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code (see line 11 of page 20). Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

*Claim Rejections - 35 USC § 112*

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 1 and 21 now contain the limitation “wherein a size and a coding of said selected packet type are dependent upon one another”. In the remarks section on page 9 of the paper filed 7/12/2004, the applicant has indicated that support for this new limitation may be found throughout the application and specifically in pages 20-23. The examiner has reviewed the application again focusing specifically on pages 20-23 and does not believe this limitation to be supported in the specification. The applicant can overcome this rejection by removing this limitation from the claims, or by providing a significantly more detailed explanation of specifically what teachings in the specification support this limitation. The passage in pages 20-23 of the application describe several examples in which either the size of the packet type or the coding of the packet type are changed, but in all of these instances, it appears that the specific

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component is changed independently of the other. For example, lines 19-21 of page 20 describe an example of when the coding is changed in a noise-limited environment. However, the size of the packet type is still the same in this case and thus the coding of the packet type changed independently of the size of the packet type.

Claims **2-20 and 22-41** depend upon claims 1 and 21 and are thus rejected for the same reasons.

Claim **41** is further rejected because it contains the limitation “minimizing a second parameter of said packet type, said second parameter related to either said noise quality measure or said interference quality measure, whichever is not indicative of said limiting factor” which is not supported in the specification. The applicant has also cited pages 20-23 of the specification as providing the support of this limitation. However, examiner does not believe that this section or the rest of the specification support this limitation. The passage in pages 20-23 cites a number of examples where one or more parameters of a packet type are modified based on a quality measure. However, this section appears to contain support only for the step of “optimizing” of claim 41. For example, in lines 19-21 of page 20, the first parameter (the coding type) of the packet type is changed. However, the second parameter of the packet type (the size of the packet) is still at the maximum size. It is not clear how this supports the limitation of “minimizing” the second parameter. The applicant can overcome this rejection by providing a more detailed explanation of specifically what teachings in the specification support this limitation.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims **1-3, 8-9, 10-11, 14, 16-17, 21-23, 28-29, 30-31, 34, and 36-37** are rejected under 35 U.S.C. 102(b) as being anticipated by the paper “Improving Wireless LAN Performance via Adaptive Local Error Control” by Eckhardt et al.

Regarding claims **1 and 21**, Eckhardt discloses the step of determining a quality measure in the quality measures of truncation detection and decoder failure discussed in section 6.3 on page 335. The channel quality processor is the 80486 processor described in the third line of section 7.1 on page 335. The step of estimating a quality condition is disclosed in the BIMODAL policy description paragraph found in section 6.3 on page 335 (“...when conditions are good...” and “...when they are poor...”) The quality condition is the number of consecutive transactions that are truncated or corrupted. The step of selecting a packet type is disclosed in the third paragraph of section 6.2 on page 334 and in the BIMODAL policy description paragraph of section 6.3 on page 335. The different segment sizes and levels of FEC are the different packet types (“BOLD” or “ROBUST”). The packet type selector is the adaptation policy module described in section 6.2.

Regarding claims **2 and 22**, the limitation that at least one quality measure is determined based on information obtained from the receiver is disclosed in the third paragraph of section 6.2

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on page 334. The information from the receiver is the “error reports that slaves include in DATA-ACK packets”.

Regarding claims **3 and 23**, the limitation that at least one quality measure is determined based on information obtained in the transmitter unit is also disclosed in the third paragraph of section 6.2 on page 334. The information from the transmitter is the masters “own observations”.

Regarding claims **8 and 28**, Eckhardt discloses the limitation of selecting a relatively short packet type when the channel has a high bit error rate in both the BIMODAL and BI-SIZE adaptation policies in paragraphs 5 and 6 of section 6.3 on page 335. When packet corruption is detected, these policies reduce the size of the packets.

Regarding claims **9 and 29**, Eckhardt discloses the limitation of selecting a relatively long, uncoded packet type if the channel is neither interference nor noise limited in the description of the BIMODAL adaptation policy. Eckhardt states that this policy behaves exactly like the BOLD policy when conditions are good; the BOLD policy uses maximally sized packets with no error coding.

Regarding claims **10 and 30**, Eckhardt discloses the limitation that the selected packet type is the same as a previously selected packet type in the BIMODAL policy paragraph of section 6.3; the last phrase (“it sends small, heavily-coded packets until three consecutive packets are not damaged”) implies that these same “ROBUST” packet type will be selected until three consecutive undamaged packets are detected.



Regarding claims **11 and 31**, Eckhardt discloses the limitation of the selected packet type being different than the previously selected packet type in the paragraph describing the BIMODAL policy of section 6.3 on page 335.

Regarding claims **14 and 34**, Eckhardt discloses the limitation of the estimating step including comparing the quality measure to a predefined value in the BIMODAL policy paragraph (section 6.3 on page 335). The predefined value in this case is two. If more than two consecutive packets are truncated or corrupted, a particular action is taken.

Regarding claims **16 and 36**, Eckhardt discloses the limitation of at least an error detection quality measure being used to estimate the channel condition in the detection of truncations described in section 6.3 on page 335. As described on line 2 of section 3.2 on page 329, truncation is the partial loss of a packet, so detection of packet truncation is clearly an error detection quality measure.

Regarding claims **17 and 37**, Eckhardt discloses the limitation of at least an FEC quality measure (corruption) and an error detection quality measure (truncation) being used in the decoder failures described in the description of the BIMODAL adaptation policy in section 6.3 of page 335.

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims **1-2, 11-13, 21-22, and 31-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over the Bluetooth Core Specification Version 1.0 B (hereinafter referred to as “Bluetooth 1.0 B”) in view of U.S. Patent 6,567,375 to Balachandran et al.

Regarding claims **1 and 21**, Bluetooth 1.0 B discloses all the limitations of these claims in section 3.19 on page 217. In the title of this section (“Channel Quality-Driven Change Between DM and DH”) and in lines 1-3, the document clearly indicates that the change between DM and DH is to be driven based on the channel quality. Thus it is inherent that the devices are able to ascertain the channel quality. This anticipates the step of and channel quality processor for determining a quality measure for a channel of said network connection; a channel quality cannot be determined without a quality measure. The channel quality processor of claim 21 for performing this step of determining is anticipated by the processor that implements the link controller (LC) (see lines 7-8 of page 217 “Based upon quality measures in LC”). Further, the step of and channel condition processor for estimating a quality condition are anticipated by the channel quality discussed in this section. The link controller is also the channel quality

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processor. The step of and packet type selector for selecting a packet type are anticipated by the change between DM and DH packets as discussed in this section. The packet type selector is the link manager (LM).

Bluetooth 1.0 B does not disclose expressly the limitation that a size and a coding of said selected packet type are dependent upon one another. Balachandran discloses the limitation that a size and a coding of said selected packet type are dependent upon one another in throughout (see title) and in particular in lines 18-57 of column 6. Consider the sentences in lines 18-22 of column 6 which teach that the “best communication” is achieved by using a “more robust coding scheme” when the packet size is small and switching to other coding schemes (understood to be less robust) when the packet size increases. This very clearly teaches the benefit of making the packet size and selected coding scheme dependent upon one another. Bluetooth 1.0 B and Balachandran are analogous art because they are from the same field of endeavor of wireless packet communications systems. At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Bluetooth 1.0 B to make the selection of coding scheme and packet size dependent upon one another. The motivation for doing so would have been to provide the “best communication” as suggested by Balachandran on lines 18-22 of column 6. Therefore, it would have been obvious to combine Balachandran with Bluetooth 1.0 B for the benefit of providing the best communication to obtain the invention as specified in claims 1 and 21.

Regarding claims **2 and 22**, the limitation of the quality measure being determined from a receiver side is indicated in Sequence 45 and Sequence 46 on page 217. The receiver (the

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right-hand device) sends an LMP\_preferred\_rate message to the transmitter (the left-hand device) when the quality measure indicates that a change of packet type is required.

Regarding claims **11 and 31**, the limitation of the selected packet type being different from a previously selected packet type is anticipated by the change between DM and DH packet types (see the title of section 3.19 and the description in the main paragraph of page 217) which are clearly different.

Regarding claims **12 and 32**, the limitation of the network being an ad hoc network is anticipated by the fact that this document defined the Bluetooth standard which is defined for use in ad hoc networks as is well known in the art.

Regarding claims **13 and 23**, the limitation that the network is a Bluetooth wireless network is anticipated by the title of the document.

15. Claims **4-5, 15, 24-25, and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over the paper "Improving Wireless LAN Performance via Adaptive Local Error Control" by Eckhardt et al.

Eckhardt discloses the limitations of the parent claims 1, 3, 21, and 23 (as appropriate) in the rejection according to 35 U.S.C. 102(b) above. Eckhardt does not explicitly suggest the limitation of ignoring receiver side measures of claims 4 and 24, the limitation of which quality measure is determined of claims 5 and 25, the limitation of the selected packet type being the same as a previously selected packet type of claims 10 and 30, the limitation of waiting a predefined time period before selecting a packet type of claims 15 and 35.

Regarding claims **4 and 24**, it would have been obvious to one of ordinary skill in the art to ignore receiver side quality measures. In the third paragraph of section 6.2 on page 334, Eckhardt indicates how the transmitter (master) utilizes both transmitter information (its own observations) and receiver information (error reports) in the adaptation policy module to track the quality of the wireless link. As is obvious to one of ordinary skill in the art, there can be discrepancies between these two independent pieces of information. In this case, it is obvious that a simple method of resolving these differences is by using only one of the two measures when this situation is encountered. The motivation for doing so would have been to provide a simple method of resolving discrepancies between the two independent pieces of information. Therefore, it would have been obvious to modify Eckhardt to ignore receiver information for the benefit of a simple method of resolving discrepancies to obtain the invention as specified in claims 4 and 24.

Regarding claims **5 and 25**, although Eckhardt doesn't explicitly suggest the limitation of which one of the at least one quality measures depending on a previously selected packet type. However, Eckhardt uses decoder failures as one quality measure (as shown in the description of the FLEX adaptation policy in section 6.3 on page 335). Eckhardt also indicates that based on the channel quality, the transmitter may change the encoding such that the entire block carries user data; in other words, the data is unencoded. It is obvious to one of ordinary skill in the art that this measure (of decoder failure) cannot be used when the signal is not encoded. Thus, although Eckhardt doesn't explicitly suggest determining which quality measure based on the previously selected packet, it is obvious that this must be done to support the unencoded packet type described above. It would be obvious to one of ordinary skill in the art to modify Eckhardt

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to use either truncation and encoder failure measures or only truncation as quality measures based on the previously selected packet type. That is, only truncation is used when the unencoded packet type is selected and both measures are used when other packet types are selected. The motivation for doing so is to support unencoded packet types. Therefore, it would have been obvious to modify Eckhardt as described above for the purpose of supporting unencoded packet types to obtain the invention as specified in claims 5 and 25.

Regarding claims **15 and 35**, it is well known to one of ordinary skill in the art to use a timer to implement a hysteresis mechanism when automatically varying a particular characteristic in a communications system. It would have been obvious to one of ordinary skill in the art to use a timer to control the frequency at which the packet type is changed. The motivation for doing so would have been to prevent the packet type from rapidly changing back and forth between multiple types when the channel quality measure is near a threshold. Therefore, it would have been obvious to add hysteresis using a timer to the invention of Eckhardt for the purpose of preventing the packet type from rapidly changing to obtain the invention as specified in claims **15 and 35**.

16. Claims **6-7, 26-27 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over the paper "Improving Wireless LAN Performance via Adaptive Local Error Control" by Eckhardt et al in view of U.S. Patent 5,920,597 to Khayrallah et al.

Eckhardt discloses all the limitations of the parent claims 1 and 21 as described in the rejection under 35 U.S.C. 102(b) above.

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Eckhardt does not disclose expressly the limitations of using an uncoded packet type when the channel is primarily interference limited (claims 6 and 26) or using a coded packet type when the channel is primarily noise limited (claims 7 and 27).

Khayrallah teaches using higher coding rates when a channel is noise limited rather than interference limited in lines 57-61 of column 3. Khayrallah also implicitly teaches the converse of this – that lower coding rates are to be used when a channel is more interference limited than noise limited. Regarding claims **6 and 26**, the passage cited above discloses the limitation of using uncoded packet types when the channel is interference limited. Regarding claims **7 and 27**, the passage cited above also discloses the limitation of using coded packet types when the channel is noise limited. Similarly, regarding claim **41**, Khayrallah discloses the limitation of determining a limiting factor for said channel in lines 57-61 of column 3. Clearly, to determine what type of coding to use, the limiting factor must be determined. Khayrallah also discloses the limitation of optimizing a first parameter in the same passage of column 3. The first parameter is the amount of error correction coding.

Eckhardt and Khayrallah are analogous art because they are from the same field of endeavor of wireless communications systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Eckhardt to use uncoded packet types when the channel is interference limited (larger number of truncations relative to the decoder failures detected) and use coded packet types when the channel is primarily noise limited (relatively small number of truncations relative to the decoder failures detected.)

The motivation for doing so would have been to improve the efficiency with which the bandwidth is used. This is implied by Khayrallah in lines 55-64 of column 3; the statement that more error correction is justified in primarily noise-limited channels implies that the error correction is more effective in these channel conditions. Conversely, this implies that error correction is less effective in interference-limited channels. Thus, this suggestion would improve the utilization of the channel (only using bandwidth for coding overhead when it is most effective.)

Therefore, it would have been obvious to combine Khayrallah with Eckhardt for the benefit of improved utilization of the channel to obtain the invention as specified in claims 6-7 and 26-27.

17. Claims **18-20 and 38-40** are rejected under 35 U.S.C. 103(a) as being unpatentable over the paper "Improving Wireless LAN Performance via Adaptive Local Error Control" by Eckhardt et al in view of U.S. Patent 5,701,294 to Ward et al.

Eckhardt discloses all the limitations of the parent claims 1 and 21 as described in the rejection according to 35 U.S.C. 102(b) above.

Eckhardt does not disclose expressly the limitation of claims 18 and 38 of at least a received signal strength and error detection quality measure are used. Further, Eckhardt does not disclose expressly the limitations of at least a packets positively acknowledged and power amplifier voltage are used to estimate the channel condition (claims 19 and 39) or the limitation of these measure being based partly on at least one of error detection, FEC, or signal strength quality measure (claims 20 and 40).



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Regarding claims **18 and 38**, Ward discloses estimating the channel quality based on signal strength (SS) and error detection (BER) in lines 49-54 of column 8.

Regarding claims **19 and 39**, Ward discloses the limitation of estimating the channel quality based on a positive packets acknowledged in the BER from lines 49-54 of column 8. It is well known in the art that one means for estimating the bit error rate of a channel is based on the acknowledgements received in a typical ARQ error detection scheme. The limitation of the channel condition being estimated based on the power amplifier voltage is disclosed in lines 8-28 of column 5 of Ward. The last two sentences indicate that if the signal strength is less than a threshold when the system is operating at maximum power, the call will be handed off or dropped. This clearly indicates that the power of the transmitter is used in the determination of the channel condition (since, as is well known, the channel condition is used to determine when to handoff or drop calls).

Regarding claims **20 and 40**, the limitation that the positively acknowledged packets quality measure and the power amplifier voltage are based partly on at least one of the error detection quality measure, FEC quality measure, and RSSI quality measure is disclosed in lines 8-28 of column 5. This passage links the transmitter power level and the signal strength in the determination of the channel condition. If the signal strength is less than a threshold, the power level is then evaluated to make a determination on the condition of the channel.

Eckhardt and Ward are analogous art because they are from same field of endeavor of detecting channel quality in wireless systems.

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At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Eckhardt to use signal strength, bit error rate, and transmitter power level to ascertain the channel quality.

The motivation for doing so would have been to more accurately measure channel quality by using more of the potential network conditions that may affect quality (as suggested in lines 24-29 of column 8).

Therefore, it would have been obvious to combine Ward with Eckhardt for the benefit of more accurate channel quality estimates to obtain the invention as specified in claims 18 and 19.

### *Conclusion*

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert C. Scheibel whose telephone number is 571-272-3169. The examiner can normally be reached on Monday and Thursday from 6:30-5:00 Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*RCS* 12-6-04  
Robert C. Scheibel  
Examiner  
Art Unit 2666

*Seema S. Rao*  
SEEMA S. RAO 12/16/04  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800